

M. parva is regarded by Prof. Sars as identical with *M. pygmæa* (Claus), but there are differences in the structure of the third and fifth feet of the male and of the fourth feet of the female which make such an identification doubtful.

M. robertsoni, Brady *, is not a genuine species. Through the kindness of Prof. Meek I have been able to examine slides of this species made by Prof. Brady, and I find that they contain dissections of *Canthocamptus pygmæus*, Sars, and *C. crassus*, Sars. Brady's figures of the male are apparently taken from the latter species, and those of the female from the former.

The genus is one of littoral habit, and certain species are found in fresh water. *M. rapiens* is commonly met with in water with but slight traces of salt, and I have myself taken it inland in perfectly fresh water †. *M. deitersi* and *M. pro-wazeki* are apparently freshwater species, while *M. lilljeborgii* is characteristic of brackish water of high salinity, and may even be found in rock-pools by the sea-shore. *M. æstuarii*, though so far only found in fresh water, will probably prove to be an estuarine species with a preference for high salinity.

XXXII.—On a new Genus and Species of Shrew, and some new Muridæ from the East-Indian Archipelago. By
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IN connection with the determination of some rats and shrews sent to me for naming by Dr. K. W. Dammerman, the Director of the Zoological Museum at Buitenzorg, I find that the following, some of which have been long in the British Museum collection, prove to need description as new:—

CROSSOGALE, gen. nov.

Nearly allied to *Chimarrogale*.

Shape of skull comparatively normal, the brain-case not excessively broadened and flattened. Anterior incisors as broad terminally as proximally, the internal accessory notch and cusp much more developed, so that the two incisor-tips are some way apart. In *Chimarrogale* these teeth are sharply

* Monog. of British Copepoda, ii. p. 64.

† Ann. & Mag. Nat. Hist. (9) v. 1920, p. 359.

pointed, the accessory cusp is reduced, and the two tips are comparatively close together.

Range of genus. E. Indian Archipelago, instead of Himalayas, China, and Japan.

Genotype. *Crossogale phœura* (*Chimarrogale phœura*, Thos.).

Crossogale sumatrana, sp. n.

Coloured like *C. phœura* of Borneo, but size greater.

Fur, as usual in water-shrews, soft and velvety, hairs of back about 7 mm. in length. Colour above uniform sooty grey, the hair-tips black; a few longer white-tipped piles on the rump. Under surface dull brownish. Hands whitish, the swimming-fringes dark brown. Feet mostly whitish, but their outer border and the swimming-fringe brown. Tail uniformly dark brown throughout.

Skull shaped about as in *C. phœura*, but much larger and heavier.

Anterior incisors larger and stronger than in *phœura*, the characteristic internal terminal cusp strongly developed, and the main outer points well separated.

Hab. Sumatra. Type from Pager Alam, Padang Highlands.

Type. Old specimen (probably male). B.M. no. 21.2.9.1. Temporary number 169. Collected 28th November, 1918. Presented by the Buitenzorg Museum. One specimen only.

The characters of this shrew, agreeing closely as they do with those of the Bornean form, and standing out in marked contrast to those of the four known Continental species, appear to render it advisable to separate generically from each other the water-shrews of the two regions.

Of the Muridæ, the first three belong to the group characterized by a whitish end to the tail.

Rattus dominator, sp. n.

Size decidedly larger than in *R. xanthurus* and *celebensis*. Character of fur as in the latter, the body-fur not trespassing on to the tail, comparatively short, and not intermixed with long piles. General colour of upper surface uniform greyish brown; under surface sharply defined white, the hairs white to the roots. Ears, hands, and feet dark brown, the digits lighter. Tail very thinly haired, almost naked, the proximal two-fifths blackish, the remainder yellowish white. Mammæ not certainly known, probably 1—2=6.

Skull much larger than that of *xanthurus* and *celebensis*. Nasals very long, narrowed nearly to a point posteriorly.

Supraorbital ridges not heavy, considering the size of the animal. Zygomatic plate much produced forward, visible in front of the upper bridge for a distance of nearly 4 mm. Palatal foramina short, not nearly reaching to the level of m^1 , narrow, little open. Bullæ comparatively small, not so large as in the smaller *xanthurus*.

Incisors markedly opisthodont, the angle about 64° .

Dimensions of the type (as measured by Dr. Hose):—

Head and body 226 mm.; tail 256; hind foot 50; ear 21.

Skull: greatest length 56; condylo-basal length 51.7; zygomatic breadth 26.8; nasals 22.3×5.6 ; interorbital breadth 6.5; zygomatic plate 7.3; palatilar length 26.5; palatal foramina 8.2×3.2 ; upper molar series 9.

Hab. Minahassa, N. Celebes. Type from Mt. Masarang, 4000'.

Type. Adult male. B.M. no. 97.1.2.24. Original number 8. Collected 14th November, 1895, by Dr. Charles Hose. Four specimens examined.

This species, which had been wrongly determined as *R. celebensis*, is readily distinguishable by its large size, opisthodont incisors, broadly projected zygomatic plate, and small palatal foramina.

Rattus bontanus, sp. n.

Without prominent long piles in fur. White part of tail shortened.

Size rather less than in *R. celebensis* and *xanthurus*. Fur throughout of normal length (hairs of back about 20–22 mm.) and without specially elongated piles; both fur and piles are longer than in *celebensis*, but far shorter than in *xanthurus* and *marmosurus*. General colour above coarsely lined cinnamon-brown. Under surface dull whitish, not sharply defined, the lateral hairs greyish. Ears brown, not darker than head. Hands and feet brown, terminal digits lighter. Tail very thinly hairy, with broad scale-rings seven to the centimetre; blackish brown to within about 3 cm. of the tip, then white.

Skull most like that of *R. celebensis*, with similarly light supraorbital ledges and comparatively narrow little-projected zygomatic plate; but it is smaller, with narrower brain-case and longer palatal foramina, which penetrate between the first laminae of m^1 . Bullæ comparatively large.

The front of the type-skull is unfortunately broken, so that the length of the nasals and the set of the incisors cannot be determined.

Dimensions of the type (measured by the collector) :—

Head and body 187 mm.; tail 235; hind foot 43.

Skull : back of nasals to occiput 30; condyle to front of molars 28; interorbital breadth 6·2; breadth of brain-case 18; zygomatic plate 5; postforaminal palate 7·9; upper molar series 8·4.

Hab. S. Celebes. Type from Indrulaman, Mount Bonthain, 2000'.

Type. Adult male. B.M. no. 97.1.3.10. Original number 28. Collected 12th October, 1895, by A. H. Everett. One specimen only.

Distinguishable by its comparatively small size, long palatal foramina, and the relatively short white end to the tail.

It is not improbable that this species is Revilliod's *Mus* (*Epimys*) *wanthurus orientalis**, but, in any case, the name *orientalis* is invalidated by its previous use for an African *Mus* by Cretzschmar.

Rattus marmosurus, sp. n.

With very long fur, which encroaches on the base of the tail; piles long, but not excessively elongated.

Size decidedly smaller than in *R. wanturus*. Fur soft, spineless, and very long, especially posteriorly on the rump and base of tail, the ordinary hairs 25–30 mm. in length, the longer piles surpassing them by 8–10 mm.; the base of the tail as hairy as in *Lenomys meyeri*. General colour above near cinnamon-brown, the hairs coarsely ringed with black and dull rufous. Under surface greyish white, the hairs white to the base along the middle line, but laterally many hairs are slaty-based. Hands and feet brown above, whiter on the digits. Tail coarsely ringed, thinly hairy, blackish for its basal third, then white.

Skull lightly built, supraorbital ridges neither heavy nor far extended. Nasals abruptly narrowed about their middle, not pointed behind. Zygomatic plate not projected forward, about as in *R. wanturus*. Palatal foramina large and well open, their hinder edge level with the front of *m*¹. Bullæ of medium size, smaller than in *wanthurus*.

Incisors comparatively orthodont, the angle about 75°. Molars light and delicate.

Dimensions of the type :—

Head and body 230 mm.; tail 260; hind foot 36; ear 21.

Skull : greatest length 45; condylo-incisive length 42·7;

* Zool. Anz. xxxvii. p. 513 (1911).

zygomatic breadth 22; nasals 17×5.5 ; interorbital breadth 6; zygomatic plate 4.2; palatilar length 21; palatal foramina 9.2; upper molar series 7.2.

Hab. N. Celebes. Type from Mt. Masarang, Minahassa, 2000'.

Type. Adult male. B.M. no. 97. 1. 2. 22. Original number 15. Collected 1st October, 1895, by Dr. Charles Hose. Four specimens examined.

A very distinct species, readily recognizable by the unusually long soft fur of its posterior back and by its small teeth.

Rattus dammermani, sp. n.

A large harsh-furred rat of the *rattus-neglectus* group. Mammæ 3—3=12.

Size about as large as in *R. mülleri*. Fur exceedingly poor, harsh, and thin, with hardly any underfur, the chief part of the pelage formed by the numerous narrow spinous hairs. General colour above rufous-brown, the spiny hairs whitish at base, with dark brown tips. Under surface dull whitish, fairly sharply defined, the hairs light to their bases; middle line of chest faintly darker. Limbs more reddish brown, hands and feet whitish. Tail long, short-haired, uniformly brown. Mammæ 3—3=12.

Skull strongly built, elongate, with long narrow nasals, strongly developed supraorbital ridges, which sweep evenly round to the outer corners of the interparietal without forming any postorbital process or angle. Zygomatic plate strongly convex. Palatal foramina long, reaching past the level of the front root of m^1 . Bullæ fairly large. Incisors orthodont. Molars proportionally small.

Dimensions of the type (measured on a stuffed specimen):—

Head and body 206 mm.; tail 252; hind foot 43; ear (no doubt shrunk) 17.

Skull: greatest length 50; condylo-incisive length 48; zygomatic breadth 25; nasals 19.7; interorbital breadth 7.3; breadth across parietal ridges 15.8; zygomatic plate 6; palatilar length 24; palatal foramina 9.1; postforaminal palate 10.1; upper molar series 8.

Hab. (of type). Wadjo, N. Celebes, at the N.W. corner of the Gulf of Tomini.

Type. Adult female. B.M. no. 21. 2. 9. 7. Original number 105. Collected 12th April, 1915, by the Dutch Controller. Presented by the Buitenzorg Museum. One specimen.

This fine species, which I have named in honour of Dr. Dammerman of Buitenzorg, is readily distinguishable by its thin harsh fur, very different from that of *R. mülleri*, its reddish-brown colour, and long narrow skull. Its alliance would seem to be with the *rattus-neglectus* group, judging by its $3-3=12$ mammæ, but it does not seem very closely related to any described form.

Rattus pestivulus, sp. n.

A dwarf member of the *rattus-neglectus* group.

Size very small, hardly greater than in the *concolor* group. Fur thin and coarse, not definitely spinous. General colour above dull reddish brown, sides rather greyer, under surface sharply defined white, the hairs on the throat with grey bases. Hands and feet white. Tail of medium length, thinly haired, light brown, almost white basally. Mammæ $3-3=12$.

Skull conspicuously smaller in all dimensions than in *neglectus*, but of about the same general proportions. Supra-orbital beads distinct; no postorbital projections. Palatal foramina to the level of the front root of m^1 . Bullæ of normal size.

Dimensions of the type (measured on a stuffed specimen):—

Head and body 151 mm.; tail 148; hind foot 30; ear (no doubt shrunk) 13.

Skull: greatest length 37.5; condylo-incisive length 36; zygomatic breadth 18; nasals 13; breadth across parietal ridges 14; palatilar length 18.5; palatal foramina 7.4; upper molar series 6.5.

Hab. Menado, Celebes.

Type. Adult female. B.M. no. 21. 2. 9. 11. Temporary number 16. Collected 1908 by Dr. Mohari. One specimen.

This pygmy member of the *rattus-neglectus* group is an island analogue of the small S.-Indian *R. r. wroughtoni* and *R. kandianus*, but seems to deserve a special specific name.

Uromys talaudium, sp. n.

A beautiful ochraceous species, barely less vivid than *U. fulgens*.

Size about as in *fulgens*. General colour above rich ochraceous, below sharply contrasted white, the hairs white to their bases. Body-fur extending on to base of tail for more than half an inch. Hands and feet white. Tail long, nearly as long as in *fulgens*, uniformly pale brown.

Skull about the same size as in *fulgens*, but not so heavily

built, less convex above, with narrower interorbital space, narrower brain-case, and longer, less open palatal foramina. Palate slightly broader, the two molar series less strictly parallel, more divergent behind.

Dimensions of the type (measured on a skin):—

Head and body 145 mm.; tail imperfect (in another similar-sized specimen 190); hind foot 31.

Skull: greatest length 39.5; condylo-basal length 37.8; zygomatic breadth 21; nasals 13; interorbital breadth 6.2; palatilar length 18.4; palatal foramina 6.3; breadth across outside m^2 8.8; upper molar series 7.3.

Hab. Talaud Islands, between Gilolo and Mindanao. Type from Liroeng.

Type. Adult female. B.M. no. 21. 2. 9. 3. Temporary, number 24. Taken by the Controleur 13th April, 1916. Presented by the Buitenzorg Museum.

By the discovery of this distinct species the known range of the genus is considerably extended north-westwards.

XXXIII.—Notes on the East Asiatic Members of the Species *Sciurus vulgaris*, Linn., with Descriptions of Two new Sub-species. By ARTHUR DE C. SOWERBY, F.Z.S., F.R.G.S.

WHILE on a summer excursion into the biologically little-known district in North-eastern Chihli, China, known as the Tung Ling, or Eastern Tombs, I secured four specimens of a peculiarly dark squirrel belonging to the *Sciurus vulgaris* group. Two of these specimens were intended for the Smithsonian Institution, the other two being retained in my own collection in case of accidents. Only one of the skins and the two skulls of the first pair were received in Washington, and these have recently been re-examined by me and compared with specimens of various other subspecies of *S. vulgaris* in the British Museum Collection, a proceeding that has only been possible through the extreme courtesy of the authorities in the two Museums concerned. I find that the Tung Ling specimens represent a new and distinct form, easily separable from *S. v. rupestris*, Thos., of Saghalin Island, which it most nearly resembles, by its superior size and certain colour-differences. This form I propose to name *Sciurus vulgaris chiliensis*.

In the course of making my examination I find that the Corean member of this group of squirrels has not up to the
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